

Before the
Federal Communications Commission
Washington, D. C.

In the Matter of:)	
)	
Revitalization of the AM Radio Service)	MB Docket No. 13-249
Second Further Notice of Proposed Rulemaking)	

COMMENTS OF HATFIELD & DAWSON CONSULTING ENGINEERS, LLC

The engineering firm of Hatfield & Dawson Consulting Engineers, LLC (“H&D”) hereby submits these comments, specifically in response to the Second Further Notice (FCC 18-139) but with reference to previous actions and comments in this proceeding.

The specific proposals by the Commission in the Second Further Notice relate to the degree of interference protection which would be appropriate for Class A AM radio stations. These are high power stations generally occupying channels in the medium wave broadcasting band which are less congested than those used by most class B stations. While they have generally enjoyed protection from interference to some nighttime skywave service, comments previously submitted in this proceeding make clear that none actually provide interference free service to the degree contemplated by the present FCC rules.¹

FCC Proposal Regarding Class A station Protection:

As noted in our previous comments, we support the Commission’s proposal to change the daytime protected groundwave contour of class A stations to the 0.5 mV/m contour.

We recommend Alternative 2 of the Commission’s Second Further NPRM proposals regarding Critical Hours (daytime skywave) protection. Skywave propagation does not undergo a “switch” at sunrise and sunset, and of course those times are determined by geographic location. Such protection during the transitional hours of sunrise and sunset is appropriate. The allowable levels can be calculated to protect the 0.5 mV/m

¹ The technical standards for prediction of both skywave service and skywave interference have, of course, been modified by the Commission over the 60 or so years since the classifications of stations was first employed.

groundwave service from the present methodology suitably scaled.

We recommend Alternative 2 of the Second Further NPRM proposals for nighttime protection. There is no point in protecting a low value of groundwave contour on a single signal basis when it is clear that on all of the so-called “clear channels” there are multiple existing domestic and foreign interference sources. While some of these channels have foreign stations or allotments which produce very high values of interference to US class A stations, many of these are on List B (or List D) of the ITU’s database for Region II, and are therefore not used in an RSS calculation.

In our review of the comments and reply comments over the course of this Rulemaking matter from 2013 onward, we find that it is very unfortunate that some parties have seriously misrepresented the state and nature of skywave service by class A stations, which by and large is no longer a useful or important public service even where it actually exists.

FCC Proposals Regarding Daytime Protection and Nighttime RSS Calculations for Class B, C, and D Stations:

We agree with the proposed changes in nighttime RSS calculations as we stated in our previous comment.

We also agree with the proposed changes in daytime protection requirements. We are aware that other commenters in this Second Further NPRM propose revision of the D/U ratios to be employed in these calculations, but given the levels of radio frequency noise in rural as well as urban and suburban areas we do not believe that such D/U ratio changes are necessary.²

In fact, the Commission has long been well aware that the 0.5 mV/m groundwave contour is an unrealistically low value to provide meaningful service. For many years some new station applications and modification applications for existing stations were allowed to receive groundwave interference to their 1 mV/m contour, per the provisions of the former 47CFR73.47(b). And Class C stations are actually protected only to their 1 mV/m contour as a result of the Commission’s actions increasing the allowable power

² See Comments of duTreil, Lundin & Rackley, and Comments of Broadcast Transmission Services, LLC (Karl Lahm)

from 250 watts to 1 kW for these stations, as outlined in the (rather confusingly complex) provisions of 47CFR73.37(b) and (c).³

It should also be noted that the Commission's rules and policies already consider the useful service of stations to be limited to the 2 mV/m contour, used by the FCC to define AM coverage in two contexts:

- a) As one aspect of the boundary within which an FM translator's contour must be contained (the other aspect being within 40 km of the AM site)
- b) For determining the number of other services in gain or loss areas associated with community of license change proposals.

Other Matters:

Although propagation calculation methodology is not within the matters the Commission has addressed in this rulemaking, attention should be drawn to skywave calculation methods as a part of any general consideration of AM allocation policies. The calculation of skywave interference for domestic interference considerations is performed by the use of the formula in 47CFR73.190(b) and (c). This formula, developed by John Wang of the Office of Engineering and Technology, has been a quite good model for North America north of about 20 degrees North Latitude. It does not incorporate a provision for paths longer than 3200 km, and is of questionable accuracy for paths with one point south of 20 deg. NL, particularly for paths which transit the equatorial region. We strongly recommend that in calculations of RSS signals to US stations, all incoming interference levels on such long or trans-equatorial paths be ignored.⁴

There is an even further problem with the present skywave calculation methodology, however. While its validity at the time of its development is very good, the circumstances of geomagnetic geography have changed considerably even in the short time period since its development. North America has been a unique situation for MF skywave propagation compared to much of the rest of the northern hemisphere because of the proximity of the North magnetic pole. This situation is changing, and

³ See "The 1 mV/m Protected Contour History," Radio World Engineering Extra, Dec. 13, 2017, p. 22


⁴ This characteristic may be because the specific formula was developed for US domestic use and long path situations were not considered when it was incorporated into the rules.

the change appears to be accelerating.⁵

Therefore we strongly recommend that the Commission review the underlying basis for the current skywave propagation method and make suitable modifications for the long path calculation situation, and for revisions in geomagnetic latitude resulting from the changes in the earth's magnetic field circumstances.

Respectively Submitted

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⁵ See NASA website data:
https://www.nasa.gov/vision/earth/lookingatearth/29dec_magneticfield.html
This information is from 2002, and reference should also be made to more recent data which is not available from NASA at the time of this writing due to the government shutdown.